

## Chapter 4

# Inconvenient Facts About the Electoral College

**Abstract** The Electoral College has its internal logic and mathematics that are not easy to understand in depth. Constitutionally, a person voted for as President in the Electoral College and received any majority of votes from all the appointed electors (as a result of counting these electoral votes in Congress in the January that follows the election year) becomes President. (This is, however, the case provided this person meets all the constitutional eligibility requirements of the office of President.) However, since the 1824 election, votes cast in all the states that appoint their electors by holding popular elections have been tallied. This tally of votes cast (nowadays) in 50 states and in D.C. for electors of presidential candidates does not have any constitutional status. Yet it is customarily considered as the popular vote that presidential candidates receive nationwide. This chapter analyzes the conceptions of (a) the popular vote, (b) the voting power of a voter (c) the voting power of a state, and (d) the will of the nation in a presidential election, along with their customary understanding by a sizable part of the American people. The chapter presents percentages of the popular vote that could have elected President one of the candidates in the elections held from 1948 to 2004.

**Keywords** *A priori* voting power of a voter • *A priori* voting power of a state • Apportionment of seats in the House of Representatives • Minimum fraction of the popular vote to elect a President • Popular vote • Will of the nation

The Electoral College has its internal logic and mathematics that are not easy to understand in depth. Constitutionally, a person voted for as President in the Electoral College and received any majority of votes from all the appointed electors becomes President. (This is, however, the case provided no electoral votes are rejected by Congress as a result of counting all the electoral votes cast, and the person meets all the constitutional eligibility requirements of the office of President.) However, since the 1824 election, votes cast in all the states that appoint their electors by holding popular elections have been tallied. This tally of votes cast (nowadays) in 50 states and in D.C. for electors of presidential candidates does not

have any constitutional status. Yet it is customarily considered as the popular vote that presidential candidates receive nationwide.

This chapter analyzes the conceptions of (a) the popular vote, (b) the voting power of a voter (c) the voting power of a state, and (d) the will of the nation in a presidential election, along with their customary understanding by a sizable part of the American people. Percentages of the popular vote that could have elected President one of the candidates who participated in the elections held from 1948 to 2004 are presented, and some egregious election outcomes that the Electoral College-based election system may eventually produce are described.

## 4.1 The Popular Vote as Americans Understand It

In all American elections, except for presidential ones, a person with the most votes wins the election. The tally of votes cast by all the participating voters in an election is customarily called the popular vote. Americans are used to determining the election winner by popular vote.

In presidential elections, voters do not cast their votes for President and for Vice President. Only if the state legislature of a state decides that state presidential electors should be chosen by holding a statewide popular election, will state voters cast their ballots even for state electors. Currently, all the states choose their electors in this manner, by holding statewide elections in which state voters cast their ballots for slates of state electors. Voters in the states of Maine and Nebraska also cast their ballots for slates of electors in congressional districts—in two districts in the state of Maine and in three districts in the state of Nebraska. The slate in each congressional district in either state consists of one elector. The District of Columbia holds a district-wide election in which D.C. voters vote for slates of electors, each consisting of three electors (see Chap. 2 for more details).

The whole notion of the nationwide popular vote does not, generally, make sense, since the tally of all the votes cast for electors from different states and D.C. is not the national tally of votes cast for President and for Vice President. Yet since the 1824 election, this national tally has unofficially been conducted in every presidential election, and its results have been attributed to presidential candidates.

When state voters in a state could favor electors from the slates of state electors submitted by different candidates, attributing the votes cast to a particular candidate could present substantial difficulties. This was the case in several elections, and the 1960 election was one of the most controversial, since the application of two different schemes of attributing the votes cast led to different outcomes [6].

When a state voter in each state can favor only the whole slate of electors and cannot favor electors from different slates, technically, all the votes cast can be considered as those favoring the candidates submitting the slates. Nowadays, the “winner-take-all” method for choosing state electors is applied by all the states and D.C., as well as by all the congressional districts of Maine and Nebraska, so all the votes cast in a presidential election are those cast for slates of electors only.

Therefore, technically, one can call the tally of votes cast for all the slates of state and D.C. electors the national popular vote for President.

The nationwide popular vote in presidential elections does not have any constitutional status. Yet its count creates the wrong impression in many voters that they vote for President and for Vice President. It is this wrong impression that causes many people to believe that the election winner is the candidate who won the popular vote. The current election system determines the winner by determining whose slate of electors won in every state and D.C. separately. It uses the popular vote results in every state only to determine the winning slate of electors there. The slates of electors that won in all the states and in D.C. form the Electoral College that is to elect a President and a Vice President.

To explain why the popular vote winner may not win in the Electoral College, consider the 11 largest states in the country—California, Texas, New York, Florida, Pennsylvania, Illinois, Ohio, Georgia, Michigan, North Carolina, and New Jersey—which currently control 270 electoral votes combined. This number of electoral votes coincides with the number of members of Congress that these states have in the election year in which these states can appoint 270 electors combined. (The census conducted every ten years determines the apportionment of the number of state Representatives in Congress for the next decade, and each state has two Senators [19].) If the electors of a candidate win in each of these states, the candidate wins the election in the Electoral College, provided her/his state electors in each state vote faithfully, i.e., in line with statewide election results there, determining the winning slate, and no electoral votes are rejected by Congress in the January that follows the election year.

Currently, a majority of all eligible voters reside in these 11 states [22]. Therefore, in any direct popular election in which all eligible voters in the country vote, and all the voters from the 11 states favor candidate A, candidate A wins. However, the number of voting voters in the 11 states does not affect this election outcome as long as the electors of candidate A receive a plurality of votes in each of these states. This is the case since the 11 states control (currently) 270 electoral votes combined independently of how many eligible voters from these states decide to vote in an election. (As mentioned earlier, a) this number of electoral votes coincides with the number of members of Congress that these states have in the election year in which these states can appoint 270 electors combined, and b) the census conducted every ten years determines the apportionment of the number of state Representatives in Congress for the next decade [19].)

Thus, once the apportionment determines that the 11 states will have 248 state Representatives combined plus 22 U.S. Senators (two in each state), these states will be in control of the Electoral College. Therefore, if a candidate manages to win in each of these states, no matter how many voters may decide to vote, this candidate wins in the Electoral College. The number of voting voters in each of the 11 states can be small or even negligibly small. If this is the case, the percentage of votes needed to win the election in the Electoral College can also be small or even negligibly small (independently of the voter turnout in the other states and in D.C.), provided the popular vote results always determine the election winner in each of the states and in D.C..

The minimum percent of the popular vote that can secure the victory in the Electoral College, however, equals zero. Indeed, constitutionally, the state legislatures in each of the 11 largest states may decide to appoint electors themselves in a particular election, without holding a popular election. Let us assume that (a) the rest of the country chooses electors by holding statewide popular elections, and (b) all the electors appointed in the 11 states favor one and the same person. Then this person may win in the Electoral College with no votes received by her/his electors (if her/his electors do not receive votes in any other state and in D.C.).

## 4.2 Which Election System Requires More Popular Votes to Win

Though the percentage of the popular vote that can elect a President in the Electoral College can be negligibly small (and theoretically, can even be equal to zero), one may wonder how small or large this percentage can be in real elections. The comparison of this percentage with the one needed to win a direct popular election can help judge which election system better reflects the popular will.

As far as the author is aware, Professor George Polya, a prominent American mathematician, was the first to consider this issue. In 1961, he published an article in which he described how this percentage can be calculated approximately, under (a) a set of assumptions on relations between the votes cast and the electoral votes received by particular candidates, and (b) the structure of the Electoral College that existed in the 1960 election [41]. He proposed an elegant arithmetic approach to solving the problem and showed that 22.08 % of voting voters could have elected a President in the 1960 election. His approach is so simple that any high school student familiar with arithmetic can understand how to calculate this percentage (under the assumptions made).

In 1990, Professor Arnold Barnett of MIT proposed a different approach to approximately calculating this percentage. Barnett's approach does not use some of the assumptions under which Polya developed his approach [42]. Also, the application of Barnett's approach allows one to receive more exact values of the percentages than the approach proposed by Polya, and Barnett calculated these percentages for the elections held from 1972 to 1988.

In 2007, the author published an article in which he proposed an exact method for calculating the minimum percentage of the popular vote that can elect a President in the Electoral College [43] and calculated the percentages for elections held from 1948 to 2004. The above percentages were calculated based upon the available actual data on votes cast in all the states since the 1948 election and in D.C. since the 1964 election [31] under the following assumptions:

- (a) all the votes were cast for (the electors of) two major party candidates only,
- (b) the electors of only one major party candidate won in the state of Maine, and the electors of only one major party candidate won in the state of Nebraska, and
- (c) the winning slate of electors in each state and in D.C. would represent the state in the Electoral College, and all the state electors voted faithfully.

The results of the calculations are presented in the following table: [1, 43]:

Election year	Contenders	The number of the electoral votes in play in the election	The minimum majority of the electoral votes in play in the election	The fraction of the popular vote that could have elected a President (%)
1948	Truman–Dewey	531	266	16.072
1952	Eisenhower–Stevenson	531	266	17.547
1956	Eisenhower–Stevenson	531	266	17.455
1960	Kennedy–Nixon	537	269	17.544
1964	Johnson–Goldwater	538	270	18.875
1968	Nixon–Humphrey	538	270	19.970
1972	Nixon–McGovern	538	270	20.101
1976	Carter–Ford	538	270	21.202
1980	Reagan–Carter	538	270	21.348
1984	Reagan–Mondale	538	270	21.530
1988	Bush–Dukakis	538	270	21.506
1992	Clinton–Bush	538	270	21.944
1996	Clinton–Dole	538	270	22.103
2000	Bush–Gore	538	270	21.107
2004	Bush–Kerry	538	270	21.666

Assumption (b) held for all the elections from 1948 to 2004. The 2008 election turned out to be the first in which one of the states split its electoral votes between two major party candidates. (The electors of Barack Obama won one electoral vote in one of the three congressional districts in Nebraska.)

Though assumption (a) did not hold in the above elections, the percentage of votes cast for (the electors of) presidential candidates other than those from the major parties was negligibly small, except for the 1992 and 1996 elections. In each of the two elections, (the electors of) R. Perot received substantial numbers of votes. Particularly, they received almost 19 % of all the votes cast in the 1992 election [31]. In a three-candidate race in the 1992 and in the 1996 elections, only a plurality rather than a majority of all the votes cast in a state or in D.C. was needed to win all the electoral votes there. Therefore, the actual minimum percentage of the popular vote that could have elected a President in the Electoral College could only decrease.

The difference in the assumptions about the election rules in the calculations of the above percentage according to the approximate method by Polya and according to the exact method by the author caused a significant difference between the results for the 1960 election. In addition to assumptions (a)-(c), in his calculations Polya assumed that [41]

- (d) the number of the votes cast in a state is proportional to the number of Representatives the state has in the House of Representatives, and

- (e) the number of Representatives in the House of Representatives was 437 rather than 435.

Also, in the 1960 election, the District of Columbia did not have presidential electors. All these assumptions are significant.

The difference between the calculation results presented by Barnett for the 1972–1988 elections [42] and those by the author for the same election years [43] is negligibly small though Barnett and the author used different sources for the data [1, 43]. This insignificant difference between the results is understandable and is quite common for approximate and exact methods. The analysis of Barnett’s method and an example when the application of his method and the author’s method lead to different results are presented in the author’s book [1].

As mentioned earlier, one of the above assumptions ((a)) did not hold in the 1992 and 1996 elections, whereas the percentages presented in the above table for these two years reflect the case in which all the voting voters cast their votes for the electors of only two rather than three presidential candidates (that they certainly could do). If voting voters divided their votes equally among three rather than between two candidates in the race, the percentage under consideration could have only been smaller. Yet the comparison of the numbers reflected in the above table implies that all the three above assumptions ((a)-(c)) held in all the elections from 1948 to 2004. (In direct popular elections, 50 % of the votes cast plus one vote can elect a President.)

Based on the calculation results presented in the table, one can conclude that under the current election system, the nation as a whole does not have a say in electing a President, since the will of less than one-fourth of voting voters can prevail over the will of more than three-fourths of them. However, this is not the fault of the Electoral College, which has never been designed to reflect the popular will in the elections.

Many political scientists, reporters, and observers consider the distribution of the national popular support of the candidates in the course of the election campaign as an indicator of their potential victory in the election. However, one can easily be certain that, for instance, a “dead heat” at any stage of the election campaign does not mean that the election in the Electoral College will be close.

Indeed, for the sake of simplicity, let us consider an election in which voting voters favor only two major party candidates, and let the candidates run statistically even in the popular vote. Then under the current election rules, one of them may win any number of electoral votes from zero to 538.

To be certain about a possibility of this outcome to occur, let all the states, D.C., two congressional districts in the states of Maine, and three congressional districts in the state of Nebraska use the “winner-take-all” method for appointing electors. Further, let (the electors of) candidate A win in each congressional district of the states of Maine and Nebraska and in each of the other 48 states with a one vote margin. Then the total margin of votes for (the electors of) candidate A in all the places except for D.C. will be 53 votes. Also, let (the electors of) candidate B win in D.C. with a 53 vote margin. Then candidate A will win 535 electoral votes, and

candidate B will win 3 electoral votes, while (the electors of) both candidates receive exactly the same number of votes.

Should (the electors of) candidate B lose to (the electors of) candidate A in D.C. with a one vote margin, the total margin of (the electors of) candidate A will be 54 votes, and candidate A will win all the 538 electoral votes. Since, nowadays, more than 100,000,000 voters vote in presidential elections, this 54-vote margin is negligibly small. Thus, the percentage of votes received by (all the electors of) candidates A and B in the election can be viewed as being the same.

### **4.3 The Voting Power of a Voter and the Voting Power of a State**

When the Founding Fathers designed the system for electing a President, they were concerned with the equality that the states would have in electing a President. This equality was not provided in the Electoral College, but was provided in the mechanisms for electing a President and a Vice President in Congress (see Chap. 2). Under the Electoral College rules adopted by the 1787 Constitutional Convention participants, the equality of voting voters throughout the country could not matter, since voting voters could participate only in electing state presidential electors. Therefore, only the equality of votes within a state could matter, and this would be within the state jurisdiction only.

Nowadays, since the popular vote results concern many Americans, the equality of votes cast in a presidential election has become a widespread topic actively discussed in society at election time. Participants in these discussions argue that the current election system does not provide such an equality and, therefore, is unfair. Some of the discussants assert that voters from small states have more power, since they have a smaller number of voting voters per electoral vote than do the large states. Two “senatorial” electoral votes, which each state has, do contribute to this phenomenon as does the structure of the House of Representatives, which gives at least one Representative and, consequently, one electoral vote to each state, independently of the size of its population. However, the number of voting voters per electoral vote can hardly be considered as a measure of the equality of the votes cast that the current system provides.

Indeed, the current presidential election system provides the equality of votes in statewide elections of presidential electors, as the Constitution requires. But one cannot require this system to provide the equality of all the votes cast in the country for presidential electors, since (a) these votes are cast for different groups of people (slates of electors) in different states and in D.C., and (b) the tally of the votes cast for presidential electors in different states and in D.C. does not have any constitutional status (see Sect. 4.1). However, one can measure the degree of equality of all the votes cast that the current system would provide under certain hypothetical assumptions and wonder what would be the best index to measure the above equality.

It turns out that the Banzhaf and Shapley-Shubik power indices can say something about the so-called *a priori* voting power of a state and D.C. in the Electoral College and the *a priori* voting power of a voter in a state or in D.C. [44–46]. These indices allow one to evaluate the ability of a state and of a voter, respectively, to affect the election outcome (under certain simplifying, hypothetical assumptions on how the Electoral College works). For a state and D.C., this is the ability to change the election outcome in the Electoral College. For a voter in a state or in D.C., this is her/his ability to change the state (or D.C.) election outcome by casting a decisive vote there. The *a priori* Banzhaf power indices have received more attention in studying two-party elections, a particular case of U.S. presidential elections [44], and it is these indices that will briefly be discussed in this section.

With respect to a two-party U.S. presidential election, the *a priori* Banzhaf power index of a state or D.C. is construed as the probability with which the state or D.C. can change the election outcome in the Electoral College if (a) all the electors representing the state or D.C. in the Electoral College vote collectively, as a group, (b) the group decision of a state (or D.C.) to favor a particular pair of presidential and vice-presidential candidates does not depend on the choice of its voters expressed in a statewide (D.C.-wide) election held to choose state (D.C.) electors, and (c) groups of the states and D.C. favoring either ticket form with one and the same probability.

Calculating the *a priori* Banzhaf power index of any voter H from a state in a two-party presidential election requires calculating the value of the state power of voter H to change the election outcome in the state. If the number of voting voters is odd, voter H is decisive if half of the state voting voters, except for voter H, support either candidate, and the other half support the other candidate. If the number of voting voters is even, voter H is decisive if her/his vote balances a one vote margin that either candidate receives from all voting voters except for voter H. Thus, in a state, the vote of voter H is decisive if it either breaks a tie formed by the other voting voters or if it creates a tie. The *a priori* Banzhaf power index of a voter from a state or D.C. under the Electoral College election rules, is the product of two probabilities—her/his state power value and the state’s Banzhaf power index [44]. Calculations of this index presented in [44] show the dependence of the value of this index on the number of residents in a state and the number of the electoral votes that this state has in the Electoral College. Under all the (unrealistic) assumptions underlying the calculations of this index, the larger the number of residents in a state, the larger the power of a voter in the state to affect the outcome in a two-party U.S. presidential election.

The value of the Banzhaf power index depends on the method for awarding state electoral votes, and interesting results of calculating this value under different methods, including the National Bonus Plan (see Chap. 7), are presented in [44].

Yet the results of all the calculations of the voting power of a voter even in a two-party election may be interesting only from the curiosity viewpoint. Due to the assumptions under which these calculations are conducted, their results are not applicable for analyzing real elections [44, 46]. Moreover, the unequal voting powers of the states in the Electoral College are determined by the Constitution and represent part of the 1787 Great Compromise. The same is true for the voting



powers of voters in different states due to the different numbers of eligible voters there. So blaming the Electoral College for not providing the equality of the voting power for all the voters is illogical. One cannot blame an election mechanism that was not created to provide an equal power for all voting voters for not providing this equality. This would be like blaming a train for not flying [1].

Some of the above restrictions under which the power indices of the states and of the voters in different states are calculated can be lifted. Moreover, statistical regularities such as voting patterns in different groups of voters in different states and correlations among the voting behavior of particular groups of voters can be taken into consideration [47]. However, the remaining assumptions are still quite unrealistic though they are less restrictive than those underlying the calculation of the *a priori* voting power. Also, in all statistical evaluations of the voting power of a state and that of a voter under different methods for awarding state electoral votes, the available data reflect the voting behavior of voters under the rules of the current election system. There is no reason to believe that voting patterns and correlations under these different methods for awarding state electoral votes will be the same or close to those statistically detected under the “winner-take-all” method. Both the idealistic (coin-flip) model of the voting behavior of a voter in a hypothetical (two-party) election in calculating the *a priori* voting power and the models reflecting the above statistical regularities present mostly cognitive interest. These models have so far been used mainly by the Electoral College opponents in their attempts to topple the current election system on the basis that this system does not serve the purpose for which it has not been designed.

## 4.4 How Many States Secure the Victory?

Since 1964, to win a presidential election, a presidential candidate needs to receive at least 270 electoral votes in the Electoral College (assuming that all the electors are appointed) as a result of counting the electoral votes in Congress in the January that follows the election year. Currently, the 11 largest states control this number of electoral votes, these states constitute only 21.57 % of all the states and D. C. in the Union, and these 11 states favored one and the same candidate only in a few U.S. presidential elections [31].

For each presidential election, one can easily find the minimum number of states in which the election winner could have focused her/his election campaign to win. For instance, W. Clinton could have focused his election campaign in 16 large- and medium-size states in both the 1992 and the 1996 elections to win in the Electoral College. Indeed, California, New York, Pennsylvania, Illinois, Ohio, Michigan, New Jersey, Massachusetts, Missouri, Washington, Minnesota, Maryland, West Virginia, Tennessee, Connecticut, and Arkansas controlled 270 electoral votes combined, and he carried all of them in both elections. These states represent only 31.37 % of all the states and D.C. in the Union. Thus, the current election system

could have ignored the will of 34 states and D.C. in both elections, making their participation in both elections irrelevant [1, 22].

The number of states that can control at least 270 electoral votes combined depends on the distribution of the population throughout the country, which is updated every ten years based on the results of the mandatory census. The population distribution at the time of the census determines the number of Representatives that each state will have in the next decade and, consequently, the number of presidential electors. This rule may lead to egregious situations in which a few large states or even one large state may control 270 electoral votes.

According to the 2000 census, the entire population of the country was 281,500,000 people, and the concentration of 173,500,000 people in one state at a certain period of time surrounding the census time could have put this state in control of 270 electoral votes [1, 18] in both the 2004 and the 2008 elections. The state of California occupies a territory of 158,693 square miles, and, for instance, Japan occupies a territory of 143,629 square miles. In 2010, the population of Japan was about 128,000,000 people, so the concentration of 173,500,000 people in California at the time of the 2000 census looks possible (at least for a period of time surrounding the census time). Certainly, migration of the population to California and to the three large states, Texas, New York, and Florida, may eventually put these four states in control of 270 electoral votes combined and may make the participation of the other states and D.C. irrelevant in deciding the outcome in several presidential elections.

## 4.5 What Should Be Considered the Will of the Nation?

If one assumes that the election results should reflect the will of the nation, there is only one constitutional option to define it. That is, the will of the states expressed either via the Electoral College or via Congress in the House of Representatives and in the Senate. Another “candidate” for this definition is the tally of votes cast for all presidential electors (though this tally does not have any constitutional status).

Which of the two can better reflect the will of the nation?

If the votes cast for presidential electors were cast for President and Vice President, and the person with the most votes was elected President, the second definition would be appropriate. However, this would mean that (a) a President and a Vice President are elected under the rules of a direct popular election, and (b) a candidate who receives only a plurality of votes can be elected President.

In multi-candidate elections, which are quite possible in the country under any form of direct popular elections [32], a plurality of votes that wins the Presidency may be small.

Would the country accept a President who received the support of, say, only 30 % of all the voting voters, especially if this support came from densely populated metropolitan areas? Currently, this does not look to be the case.

Under the current election system, the winning candidate may not be the choice of a majority of the states. Currently, winning pluralities of votes in the 11 largest states, or in 15–20 large and medium-size states by the electors of a candidate can be sufficient to elect this candidate President (in the Electoral College) (see Sect. 4.3).

The only situation in which a President is always elected by a majority of the states is in an election in which the House of Representatives elects a President. However, electing a President in the House of Representatives takes place only as a result of a failure of the states to elect a President based upon the preferences of state voting voters. If this is the case, states are to elect a President as equal members of the Union. While the result of this type of election does reflect the will of the states, it may not represent and may even distort the preferences of voting voters.

Thus, in the framework of the current system, it may be hard to determine what should be considered the will of the nation if one wants to harmonize the preferences of the voting voters and those of the states. Chapter 7 considers a new election system that may allow one to reach a harmony between the two.

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